

Chapter 7
Chemical Reaction Calculations
Gravimetric Stoichiometry

Measurement → Steps used to measure something
 Gravimetric Stoichiometry is the procedure for calculating the masses of reactants and products in a chemical reaction.

STEPS

- 1) Write a balanced equation
 List information under the equation
- 2) Convert the given measurement to moles using $n = \frac{m}{M}$
 M — molar mass
- 3) Use the **MOLE RATIO** to calculate the amount of the **UNKNOWN** substance from the given measurement in moles.
- 4) Convert the moles of the **UNKNOWN** to the required quantity using $m = n \times M$

Ex 1
 How many grams of **oxygen** dioxide are **produced** by burning 14.31g of propane?

1) $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$
 $n = \frac{m}{M} = \frac{14.31g}{44.1g/mol} = 0.324mol$

2) $n = 0.324mol \times 5 = 1.62mol$
 $M = 32.00g/mol$
 $m = 1.62mol \times 32.00g/mol = 51.84g$

3) $n = 0.324mol \times 3 = 0.972mol$
 $M = 44.01g/mol$
 $m = 0.972mol \times 44.01g/mol = 42.78g$

4) $n = 0.324mol \times 4 = 1.296mol$
 $M = 18.02g/mol$
 $m = 1.296mol \times 18.02g/mol = 23.35g$

Assumed Ques: Ans: 9.12g, 11.36g, 12.68g, 10.53g, 12.68g, 12.68g

Apr 20-2:57 PM